



# U.S. DEPARTMENT OF **ENERGY**

**NEWS MEDIA CONTACT:**  
**(202) 586-4940**

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## **Department of Energy Announces \$100 Million Available for Innovative Research Projects**

*ARPA-E's 3<sup>rd</sup> funding opportunity to focus on grid-scale energy storage, electrical power technology, and building energy efficiency*

WASHINGTON, D.C. – At the inaugural ARPA-E Energy Innovation Summit today, U.S. Energy Secretary Steven Chu announced \$100 million in Recovery Act funding will be made available to accelerate innovation in green technology, increase America's competitiveness and create new jobs. Today's announcement comes as some of the nation's top energy leaders and members of the scientific research community have gathered to ensure U.S. leadership in clean energy technologies.

"This is about unleashing the American innovation machine to solve the energy and climate challenge, while creating new jobs, new industries and new exports for America's workers," said Secretary Chu.

Today's announcement, the ARPA-E's third round of funding opportunity, is focused specifically on three technology areas:

The three areas of focus included in today's funding opportunity are:

1. **Grid-Scale Rampable Intermittent Dispatchable Storage (GRIDS).** ARPA-E seeks to develop new technologies to enable the widespread deployment of cost-effective grid-scale energy storage. While many valuable applications for grid-scale storage exist, this program focuses on developing energy storage technologies to balance the short-duration variability in renewable generation. By investing in the development of grid-scale energy storage technology, this funding opportunity will allow the U.S. to assume global technology and manufacturing leadership in the emerging and potentially massive global market for stationary electricity storage infrastructure. This program seeks to develop revolutionary new storage systems that provide energy, cost, and cycle life comparable to pumped hydropower, but which are modular and can be widely implemented at any location across the power grid. Specifically, two areas will be considered: 1) proof of concept storage component projects focused on validating new, over-the-horizon electrical energy storage concepts, and 2)

advanced system prototypes that address critical shortcomings of existing grid-scale energy storage technologies. Ultimately, technologies developed through this program will be scalable to the megawatt and megawatt-hour levels of power and energy capacity. This program will complement other Department of Energy grid-scale energy storage efforts by focusing on technology prototyping and proof-of-concept R&D efforts rather than pilot demonstration projects.

2. **Agile Delivery of Electrical Power Technology (ADEPT).** ARPA-E seeks to invest in materials for fundamental advances in soft magnetics, high voltage switches, and reliable, high-density charge storage. These investments will be coupled to advanced circuit architectures, and scalable manufacturing processes with the potential to leapfrog existing power converter performance while offering reductions in cost. Specifically, three categories of performance and integration level will be considered: 1) fully-integrated, chip-scale power converters for applications including, but not limited to, compact, efficient drivers for solid-state lighting, distributed micro-inverters for photovoltaics, and single-chip power supplies for computers, 2) kilowatt scale package integrated power converters by enabling applications such as low-cost, efficient inverters for grid-tied photovoltaics and variable speed motors, and 3) lightweight, solid-state, medium voltage energy conversion for high power applications such as solid-state electrical substations and wind turbine generators. Deploying advanced power electronics could provide as much as a 25-30 percent reduction in electricity consumption – or 12 percent of total U.S. energy consumption. Innovations in power electronics could lead to significant reduction in costs, which would promote U.S. businesses through technological leadership.
3. **Building Energy Efficiency Through Innovative Thermodevices (BEET-IT).** ARPA-E seeks to develop energy efficient cooling technologies and air conditioners (AC) for buildings to save energy and reduce GHG emissions from: (a) primary energy consumption due to space cooling and (b) refrigerants used in vapor compression systems. ARPA-E seeks innovative research and development approaches to increase energy efficiency and reduce GHG emissions due to cooling of buildings in the following areas: 1) cooling systems that use refrigerants with low global warming potential; 2) energy efficient air conditioning (AC) systems for warm and humid climates with an increased coefficient of performance (COP); and 3) vapor compression AC systems for hot climates for re-circulating air loads with an increased COP. The unique challenge for the U.S. market is to develop technologies that can be retrofitted into current cooling systems. For developing economies, there is a large market for new cooling technologies. The development of these technologies will reduce GHG emissions and significantly increase U.S. technological lead in rapidly emerging clean energy industries.

ARPA-E's first solicitation, announced in early 2009, was highly competitive and resulted in funding 37 projects aimed at transformational innovations in energy storage, biofuels, carbon capture, renewable power, building efficiency, vehicles, and other areas. ARPA-E's second solicitation announced in December, 2009 – which has yielded nearly 500 concept papers – focused specifically on three areas of technology representing new approaches for biofuels, carbon capture, and batteries for electric vehicles.

### **New Webvideo Released**

In conjunction with the summit, the Department also released a new video showcasing a project funded under ARPA-E's first round of funding grants. Sun Catalytix is developing a unique technology that mimics photosynthesis to split water into oxygen and hydrogen, which can be used for fuel. The video is online at: [http://www.youtube.com/watch?v=WD9yr-Bf-Kw&feature=player\\_embedded](http://www.youtube.com/watch?v=WD9yr-Bf-Kw&feature=player_embedded)

For more information about ARPA-E and previously announced awards please visit: <http://arpa-e.energy.gov/>.

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